

REMARKS

Claims 1-10 have been canceled. New Claims 11-22 are active in the present application. Reconsideration is respectfully requested.

The present invention relates to a process of preparing a readily water-redispersible and water-wettable polymer powder by spray-drying.

Claim Amendments

New Claims 11-16 find support in original Claims 1-10. New Claims 17-22 find support in the specification at page 6, lines 29-33 and page 7. Accordingly, entry of the new claims into the record is respectfully requested.

Specification

The amendments made to the specification are believed sufficient to overcome the objection raised in paragraph 3 of the Office Action.

Claim Rejection, 35 USC 112

The issue that has been raised with respect to Claims 1-10 is obviated by the cancellation of these claims in favor of new Claims 11-16. Claim 11, in particular, recasts the subject matter of Claim 1 in a different format. Withdrawal of the rejection is respectfully requested.

Invention

The present invention is directed to a process for the preparation of a readily water-redispersible and water-wettable polymer powder by spray-drying an aqueous dispersion of polymer particles in the presence of a hydrophobic antiblocking agent,

thereby preparing a dried polymer powder containing the hydrophobic antiblocking agent; and homogeneously mixing a hydrophilic antiblocking agent with the dried polymer powder product obtained to prepare said water-redispersible and water-wettable polymer powder. The polymer powder of the present invention represents an improvement in the art in that the polymer powder is readily redispersible in and wettable by water.

Prior Art Rejection, 35 USC 102

Claims 1-10 stand rejected based on 35 USC 103(a) as anticipated by Pakusch et al, U. S. Patent 6,291,573. This ground of rejection is respectfully traversed.

The Pakusch et al patent represents prior art that is relevant to the present invention because it discloses an aqueous polymer dispersion that can be dried by several different processes, including spray drying, while using a finely divided inorganic oxide such as silica or a silicate as an antiblocking or anticaking agent. Especially significant is the fact that the reference discloses the copolymerization of at least one vinylaromatic monomer and butadiene and at least one or more other copolymerizable monomers. However, in the spray drying of a polymer dispersion as discussed in the reference, the anticaking agent is simply mixed into the dispersion by simultaneously feeding the aqueous dispersion and anticaking agent into the spray drier and then obtaining the dried polymer powder. The patent in the last line of column 3 indicates that the anticaking agent may be either hydrophilic or has been hydrophobicized. The patent thus indicates that either a hydrophobic anticaking agent or a hydrophilic anticaking agent is used, but not both. The patent therefore does not suggest the requirement of the present claims of spray drying an aqueous dispersion of polymer particles only in the presence of a hydrophobic antiblocking agent, and then,

after a dried powder product is obtained, mixing the powder with the hydrophilic antiblocking agent. The fact that this stepwise addition of antiblocking agent initially to an aqueous polymer dispersion and then to the polymer powder is unique and gives distinctive results is demonstrated by the data in the present specification in the examples. Examples 1 and 2 are within the scope of the invention in that hydrophobic antiblocking agent is mixed with the polymer dispersion being spray dried and then the hydrophilic antiblocking agent is mixed with the dried polymer powder that is obtained. In the sole comparative example, both hydrophobic and hydrophilic antiblocking agents are metered into the drying tower along with the polymer dispersion being dried. The results of wettability experiments are described at the bottom of page 11 and on page 12 of the text, and it is clear that the products of Examples 1 and 2 exhibit superior wetting properties in comparison to the dried product of the comparative example.

Applicants do not concur with the Examiner's stated position that the present invention would have been obvious to the skilled artisan to use "a mixture of hydrophilic silica and hydrophobic silica ... with a reasonable expectation of success." In the first place, as noted above, although the reference mentions both hydrophobic and hydrophilic silica antiblocking agents, it does not show the use of both anticaking agents in the preparation of a dried polymer powder product. Secondly, the patent does not show or suggest the two stage procedure of the present invention of first spray-drying an aqueous dispersion of polymer particles in the presence of a hydrophobic antiblocking agent followed by mixing the spray dried polymer powder obtained with the hydrophilic antiblocking agent. Third, the Examiner's statement appears to suggest that a mixture of the two types of antiblocking agents is mixed into an aqueous dispersion of a polymer material. However, this is never the case in the present invention which requires the first spray-drying of an aqueous polymer

dispersion in the presence of only hydrophobic antiblocking agent, and then the subsequent admixture of only the hydrophilic antiblocking agent into the dried polymer powder obtained. Clearly, Pakusch et al does not suggest the invention as claimed.

The deficiencies of the Pakusch et al patent are neither overcome nor improved upon by Eck et al. Although the reference teaches a process of spray drying a polymer dispersion, and in particular a polymer dispersion that is only an organopolysiloxane, wherein an antiblocking agent (inorganic material (col, 5, lines 60-65)) is metered into the spray-drying device along with polymer dispersion (the paragraph bridging columns 1 and 2), there is absolutely no teaching or suggestion again of using both a hydrophobic antiblocking agent and a hydrophilic antiblocking agent in the process, and certainly no teaching or suggestion of a stepwise process wherein only the hydrophobic antiblocking agent is metered into the spray drying device along with polymer dispersion and the subsequently mixing only the hydrophilic antiblocking agent with the dried polymer powder obtained. Although the patent does teach a staged or stepwise addition of antiblocking agent to a polymer material by selecting an antiblocking agent to be used and then metering in only a portion of the selected antiblocking agent along with aqueous polymer dispersion into the spray drier, followed by either mixing the remaining amount of antiblocking agent into the suspended, dried polymer powder in the gas stream within the spray drier or after it has exited the drier, the patent does not teach the use of two different antiblocking agents, i.e., a hydrophobic antiblocking agent and a hydrophilic antiblocking agent, in the spray drying process described. Moreover, there is certainly no teaching in the patent of selecting only the hydrophobic antiblocking agent to meter into the spray drying device along with polymer dispersion, and subsequently, after having obtained a spray dried powder material, mixing the hydrophilic antiblocking agent into the dry polymer

powder. Thus, Eck et al does not overcome the deficiencies of Pakusch et al and withdrawal of the rejection is respectfully requested.

It is now believed that the application is in proper condition for allowance.
Early notice to this effect is earnestly solicited.

Respectfully submitted,

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